DOCKET NO.: PAGE01-00136 **PATENT**

SYSTEM AND METHOD FOR RETRIEVING AND DISPLAYING PAGING MESSAGES

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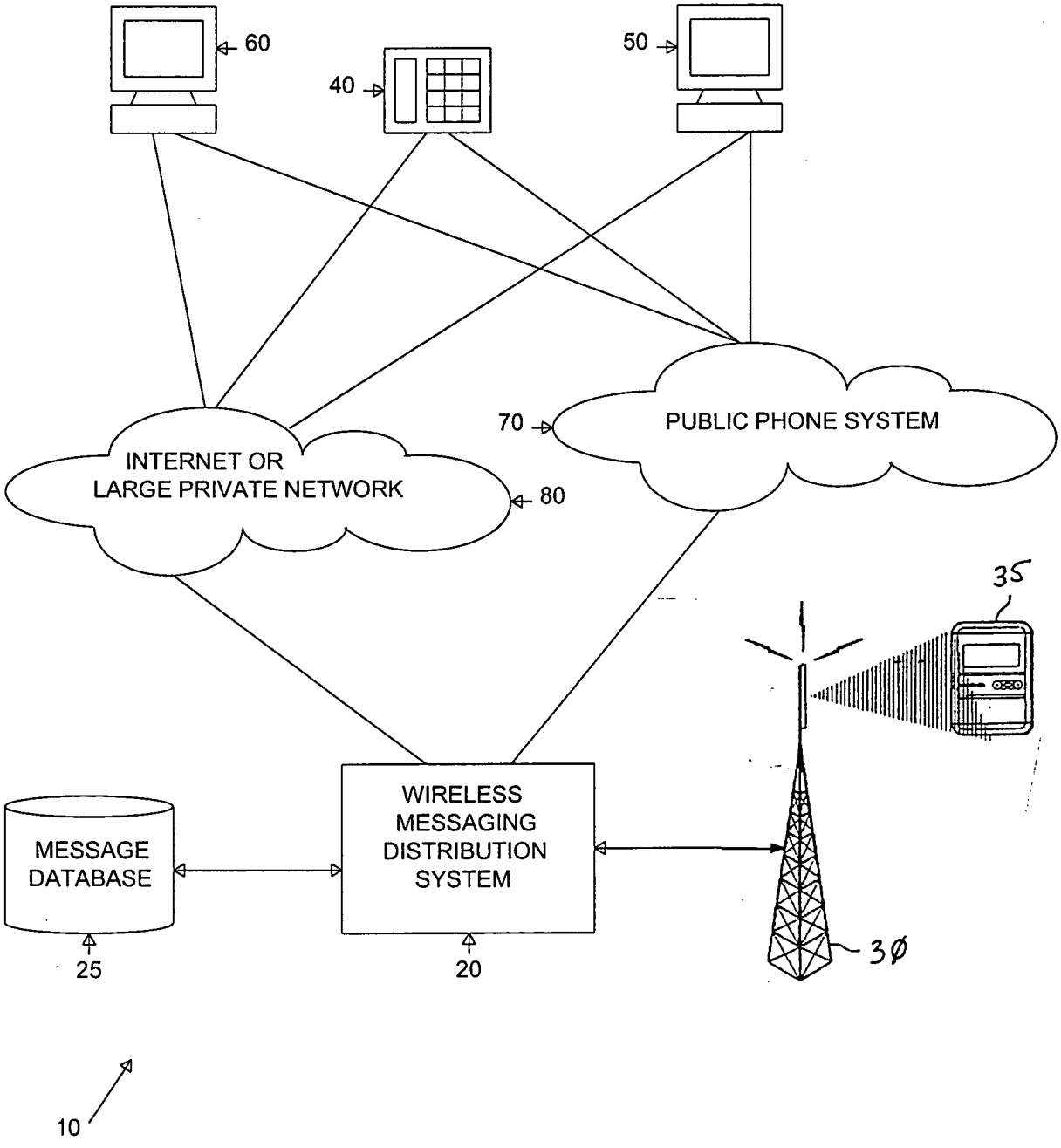
60
40
50
70
PUBLIC PHONE SYSTEM
INTERNET OR
LARGE PRIVATE NETWORK
80
35
WIRELESS
MESSAGING
DISTRIBUTION
SYSTEM
MESSAGE
DATABASE
25
20
30
10

FIGURE 1

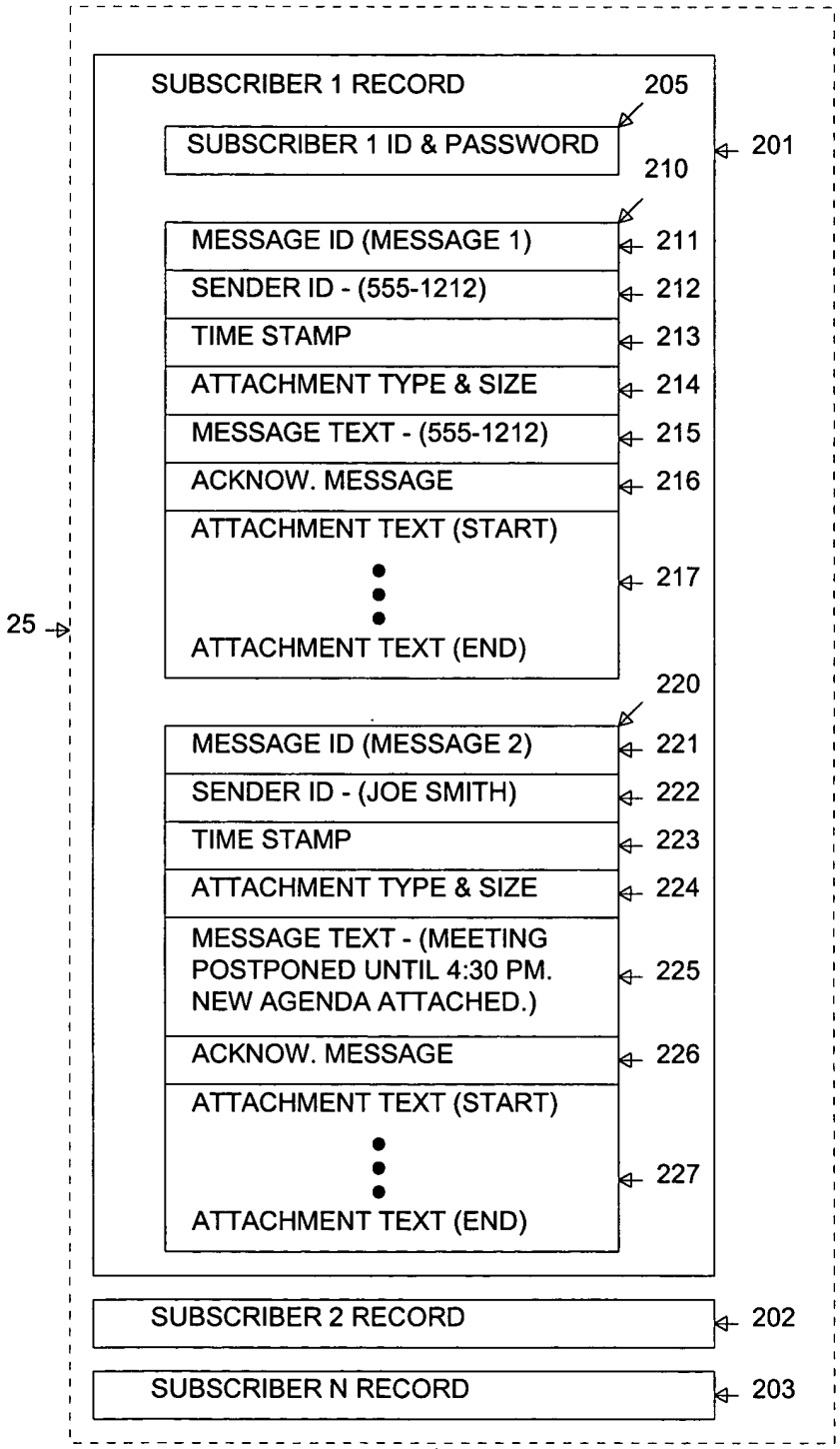
SUBSCRIBER 1 RECORD
205
SUBSCRIBER 1 ID & PASSWORD
210
201
MESSAGE ID (MESSAGE 1)
211
SENDER ID - (555-1212)
212
TIME STAMP
213
ATTACHMENT TYPE & SIZE
214
MESSAGE TEXT - (555-1212)
215
ACKNOW. MESSAGE
216
ATTACHMENT TEXT (START)
217
ATTACHMENT TEXT (END)
25
220
MESSAGE ID (MESSAGE 2)
221
SENDER ID - (JOE SMITH)
222
TIME STAMP
223
ATTACHMENT TYPE & SIZE
224
MESSAGE TEXT - (MEETING POSTPONED UNTIL 4:30 PM. NEW AGENDA ATTACHED.)
225
ACKNOW. MESSAGE
226
ATTACHMENT TEXT (START)
227
ATTACHMENT TEXT (END)
SUBSCRIBER 2 RECORD
202
SUBSCRIBER N RECORD
203

FIGURE 2

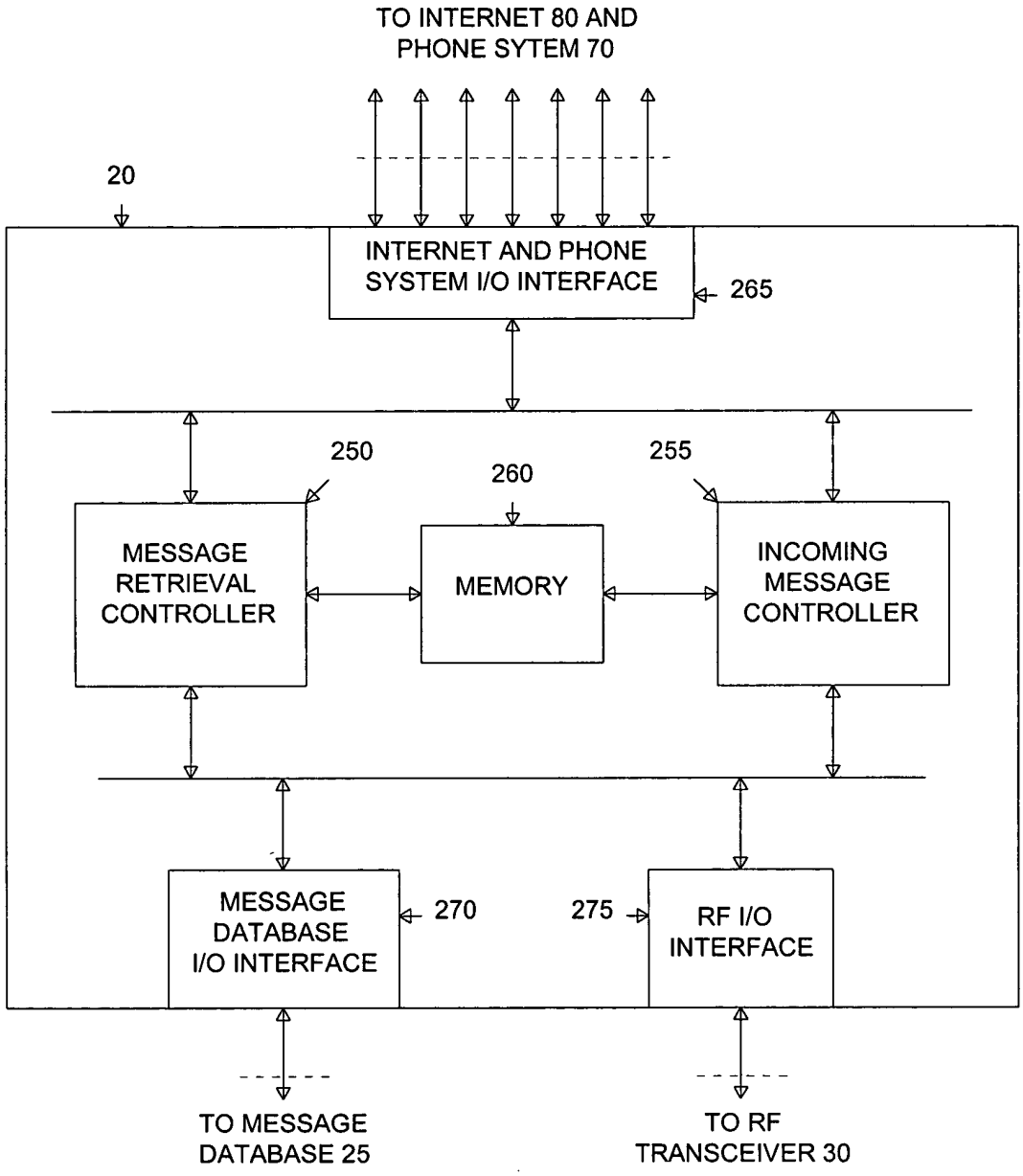
TO INTERNET 80 AND
PHONE SYTEM 70
20
INTERNET AND PHONE
SYSTEM I/O INTERFACE
265
250
260
255
MESSAGE
RETRIEVAL
CONTROLLER
MEMORY
INCOMING
MESSAGE
CONTROLLER
MESSAGE
DATABASE
I/O INTERFACE
270
275
RF I/O
INTERFACE
TO MESSAGE
DATABASE 25
TO RF
TRANSCEIVER 30

FIGURE 3

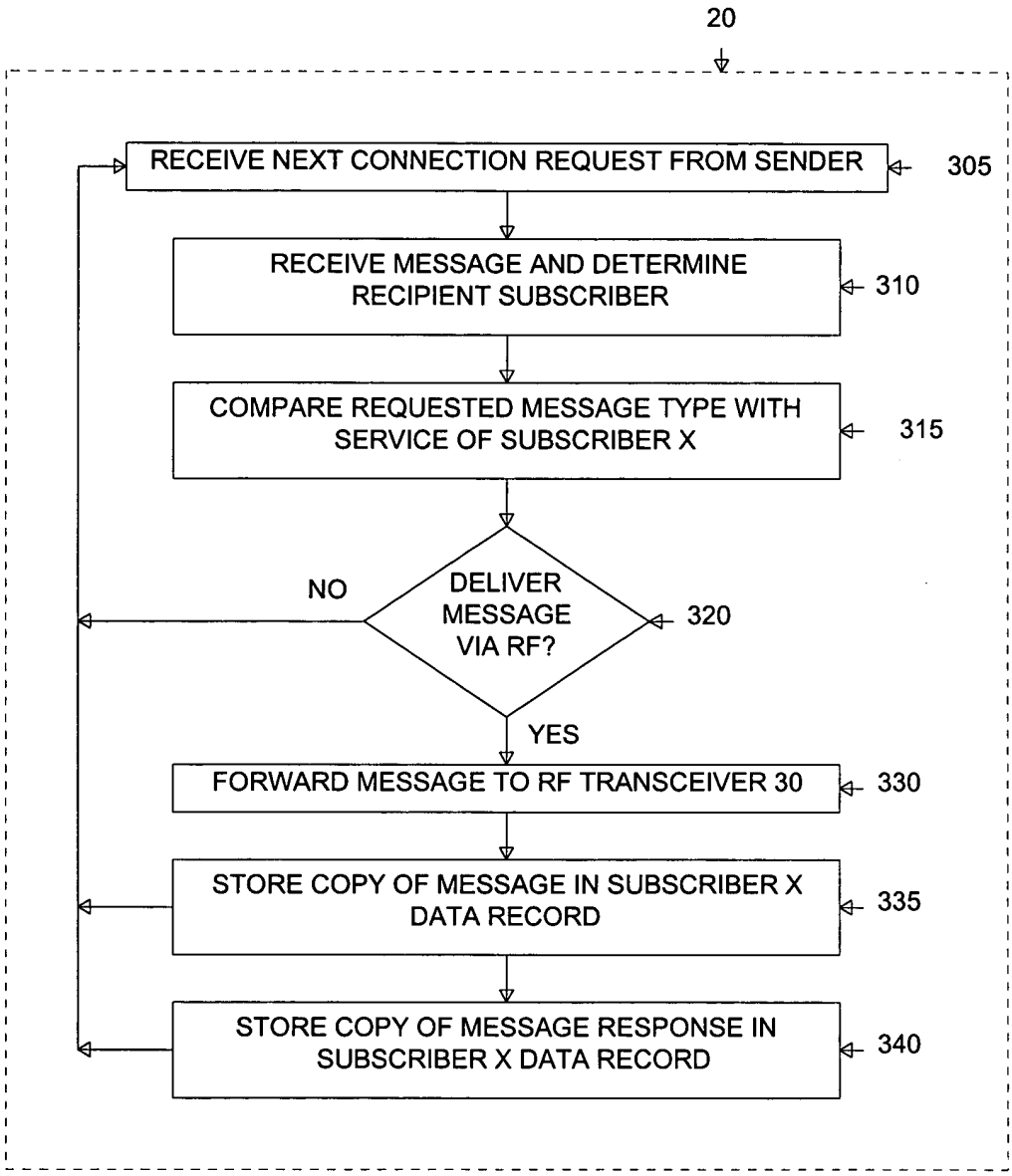
20
RECEIVE NEXT CONNECTION REQUEST FROM SENDER
305
RECEIVE MESSAGE AND DETERMINE RECIPIENT SUBSCRIBER
310
COMPARE REQUESTED MESSAGE TYPE WITH SERVICE OF SUBSCRIBER X
315
DELIVER MESSAGE VIA RF?
320
NO
YES
FORWARD MESSAGE TO RF TRANSCEIVER 30
330
STORE COPY OF MESSAGE IN SUBSCRIBER X DATA RECORD
335
STORE COPY OF MESSAGE RESPONSE IN SUBSCRIBER X DATA RECORD
340
300

FIGURE 4

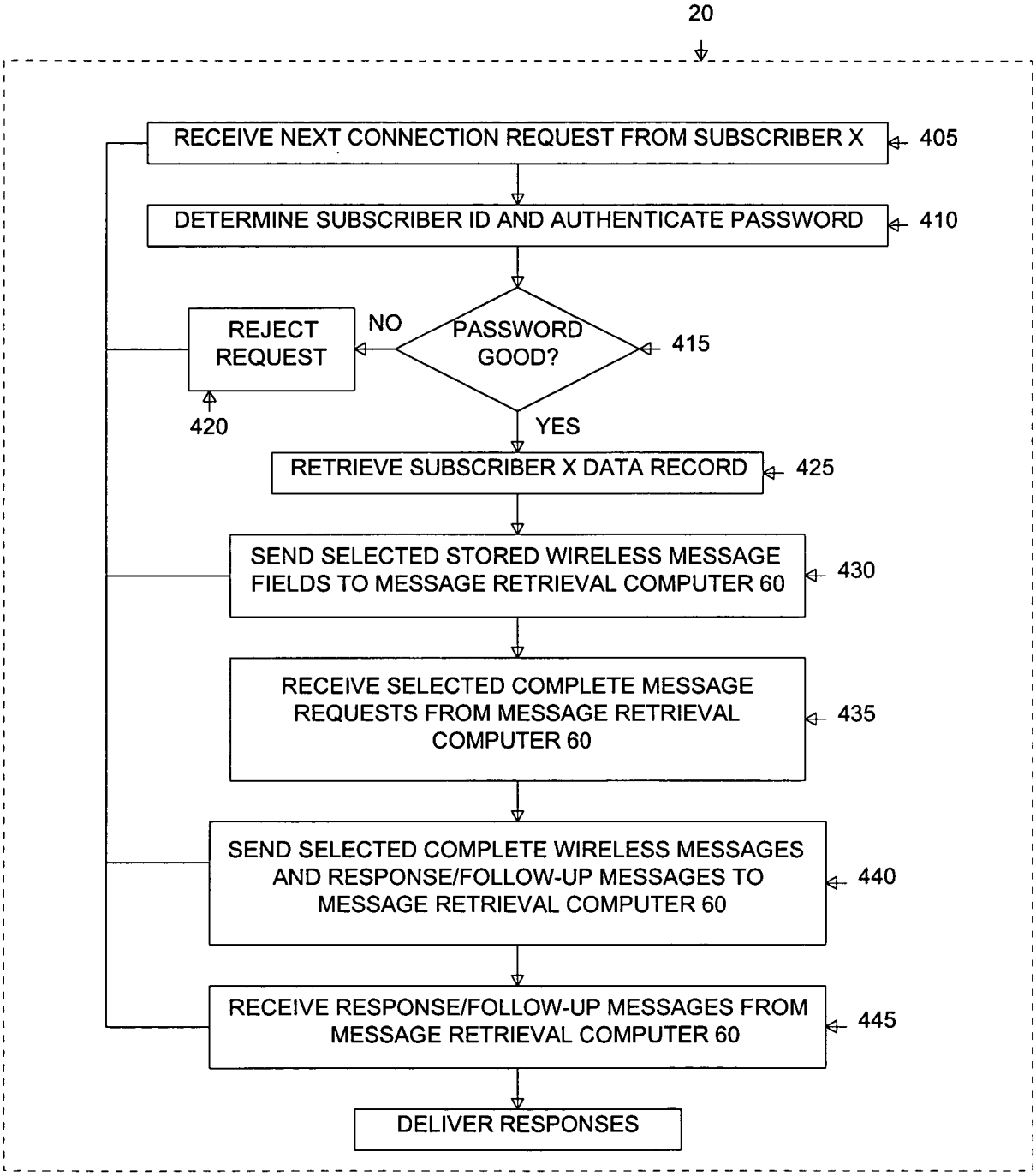
20
RECEIVE NEXT CONNECTION REQUEST FROM SUBSCRIBER X
405
DETERMINE SUBSCRIBER ID AND AUTHENTICATE PASSWORD
410
PASSWORD GOOD?
415
NO
REJECT REQUEST
420
YES
RETRIEVE SUBSCRIBER X DATA RECORD
425
SEND SELECTED STORED WIRELESS MESSAGE FIELDS TO MESSAGE RETRIEVAL COMPUTER 60
430
RECEIVE SELECTED COMPLETE MESSAGE REQUESTS FROM MESSAGE RETRIEVAL COMPUTER 60
435
SEND SELECTED COMPLETE WIRELESS MESSAGES AND RESPONSE/FOLLOW-UP MESSAGES TO MESSAGE RETRIEVAL COMPUTER 60
440
RECEIVE RESPONSE/FOLLOW-UP MESSAGES FROM MESSAGE RETRIEVAL COMPUTER 60
445
DELIVER RESPONSES
400

FIGURE 5

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SYSTEM AND METHOD FOR RETRIEVING AND DISPLAYING PAGING MESSAGES

TECHNICAL FIELD OF THE INVENTION

The present invention is directed, in general, to wireless messaging systems and methods of operating the same, and, in particular, to a system and method for retrieving and displaying paging messages.

BACKGROUND OF THE INVENTION

The demand for better and cheaper wireless telecommunication services and equipment continues to grow at a rapid pace. Part of this demand includes wireless message paging devices, which have become ubiquitous in society. Traditional one-way wireless message receiving devices (or "pagers") are giving way to newer two-way message paging devices. Additionally, the types of messages that may be sent to a pager have expanded from short telephone number messages to include longer alphanumeric messages, faxes, graphics, e-mail, and even voice messages. In some systems, wireless

messages may comprise an alphanumeric or voice message to which an electronic file, such as a text document, may be attached

Despite the wider use of higher precision electronics, the implementation of time division multiple access (TDMA), frequency division multiple access (FDMA), and code division multiple access (CDMA) technologies, and the advent of narrow band PCS services, traditional problems associated with wireless messaging still persist. Message pages are frequently not delivered to a subscriber. Part of the reason for this is that the subscriber may occasionally turn off the subscriber's message paging device. But it is also true that RF signal obstructions, RF noise and multipath delay fading are significant hindrances to wireless messaging systems.

A number of technologies and/or services have attempted to overcome problems associated with the non-delivery of wireless messages. In some systems, a subscriber may call into a service by telephone and recall the last message page sent to the subscriber's paging device. The subscriber may then request that the last message be re-broadcast to the subscriber's paging device. If the subscriber is out of range, this service has no benefit.

Alternatively, the subscriber may request that the last message page be automatically converted to speech and played to the

subscriber over the phone. The reliability of this service is limited, however, if an alphanumeric page is sent in a different language than is understood by the system or if unusual speech or non-traditional abbreviations are used in the message. In still other systems, undelivered message pages may be sent to the subscriber by means of an e-mail system. This type of system requires the subscriber to maintain an e-mail account and is of limited use in listening to voice messages.

Therefore, there exists a need in the art for an improved wireless communication system that allows a paging subscriber to accurately track all of the wireless messages sent to the subscriber. In particular, there exists a need in the art for an improved wireless message distribution system that maintains a database containing all of the wireless messages sent to system subscribers and allows those subscribers to access those messages at will. More particularly, there exists a need in the art for an improved wireless message distribution system that allows a subscriber to retrieve from a database and display in a convenient format on a computer screen (or listen to in a convenient audio format) selected wireless messages sent to the subscriber, including both delivered and undelivered messages.

SUMMARY OF THE INVENTION

The limitations inherent in the prior art described above are overcome by an improved message distribution system, for use in a wireless messaging system, that is capable of allowing a subscriber of the wireless messaging system to review stored wireless messages sent to the subscriber. The message distribution system comprises: 1) a first I/O interface capable of receiving a message retrieval request from the subscriber; and 2) a message retrieval controller coupled to the first I/O interface capable of determining an identity of the subscriber from identification data contained in the message retrieval request, retrieving a data record associated with the subscriber, the data record containing one or more of the stored wireless messages, and transferring to the subscriber one or more selected portions of at least one of the stored wireless messages.

In one embodiment of the present invention, the message distribution system further comprises a database coupled to the message distribution system that is capable of storing the stored wireless messages.

In another embodiment of the present invention, the message distribution system requires the subscriber to enter a password

prior to transferring to the subscriber the one or more selected portions of the at least one of the stored wireless messages.

In still another embodiment of the present invention, the first I/O interface is capable of receiving a wireless message directed to the subscriber.

In yet another embodiment of the present invention, the message distribution system further comprises a second I/O interface capable of sending the received wireless message to an RF transceiver facility operable to transmit the received wireless message to a paging device of the subscriber.

According to a further embodiment of the present invention, the message distribution system further comprises an incoming wireless message controller capable of determining an identity of the subscriber from identification data contained in the received wireless message.

According to a still further embodiment of the present invention, the message distribution system is capable of receiving from the RF transceiver facility a response message responsive to a transmission of the received wireless message to the paging device.

According to a yet further embodiment of the present invention, the message retrieval request is received from a public

telephone system. In an alternate embodiment of the present invention, the message retrieval request is received from a wide area data network.

The foregoing SUMMARY OF THE INVENTION outlines, rather broadly, some advantageous features of various embodiments of the present invention so that those of ordinary skill in the art may better understand the DETAILED DESCRIPTION that follows. Additional features of the invention will be described hereafter that form the subject matter of the CLAIMS OF THE INVENTION. Those of ordinary skill in the art should appreciate that they can readily use the disclosed invention and specific embodiments as a basis for designing or modifying other structures for carrying out the same purposes of the present invention. Those of ordinary skill in the art should also realize that such equivalent constructions do not depart from the spirit and scope of the present invention in its broadest form.

Before undertaking the DETAILED DESCRIPTION, it may be advantageous to set forth definitions of certain words and phrases used throughout this patent document: the terms "include" and "comprise," as well as derivatives thereof, mean inclusion without limitation; the term "or," is inclusive, meaning and/or; the phrases "associated with" and "associated therewith," as well as derivatives thereof, may mean to include, be included within,

interconnect with, contain, be contained within, connect to or with, couple to or with, be communicable with, cooperate with, interleave, be a property of, juxtapose, be proximate to, be bound to or with, have, have a property of, or the like; and the term "controller" means any device, system or part thereof that controls at least one operation, such a device may be implemented in hardware, firmware or software, or some combination of at least two of the same. It should be noted that the functionality associated with any particular controller may be centralized or distributed, whether locally or remotely. Definitions for certain words and phrases are provided throughout this patent document, those of ordinary skill in the art should understand that in many, if not most instances, such definitions apply to prior, as well as future uses of such defined words and phrases.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, wherein like numbers designate like objects and in which:

FIGURE 1 illustrates a representative portion of a message paging network in accordance with one embodiment of the present invention;

FIGURE 2 illustrates representative subscriber data records in a message database in the message paging network in accordance with one embodiment of the present invention;

FIGURE 3 illustrates an exemplary wireless messaging distribution system according to one embodiment of the present invention;

FIGURE 4 is a flow diagram illustrating a wireless message receipt and forwarding operation of a representative wireless messaging distribution system in accordance with one embodiment of the present invention; and

FIGURE 5 is a flow diagram illustrating a wireless message retrieval operation of a representative wireless messaging